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NOV 10 2003

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Application No. 09/623,023

IN THE CLAIMS:

The following listing of claims will replace all prior versions, and listings, of claims in the application:

1-8. (Cancelled)

9. (Currently Amended) A fuel cell comprising:

at least a cell function assembly including ~~an~~ a single electrolytic membrane;
a pair of electrode plates assembled in contact with opposite surfaces of the single electrolytic membrane;

a first separator ~~placed in the form of a flat plate made of an insulation material and formed with a first plurality of conductive projections in~~ contact with one of the electrode plates ~~and perforated~~ to form a reaction chamber to be supplied with fuel gas;

a second separator ~~placed in the form of a flat plate made of an insulation material and formed with a second plurality of conductive projections in~~ contact with the other electrode plate ~~and perforated~~ to form a reaction chamber to be supplied with oxidizing agent gas; and

a set of current-collecting plates assembled respectively in contact with the first and second separators at opposite outermost sides of the cell,

wherein the electrode plates each are divided into a first plurality of spaced plates in contact with the single electrolytic membrane, wherein the first and second separators each are divided into a second plurality of spaced plates in contact with the divided electrode plates, and wherein the current-collecting plates each are divided into a ~~second~~ third plurality of spaced plates in contact with the divided separators.

10-12. (Cancelled)

13. (Previously Presented) A manufacturing method of a separator for use in a fuel cell in which fuel gas and oxidizing agent gas are used as reaction gases, comprising:

pressing carbon powder containing a binder to form a plurality of projections each in the form of a conductive pillar body made of pressed carbon powder;

coating a sealing adhesive agent on a flat plate of synthetic resin;

assembling the projections with a plurality of mounting holes formed in the flat plate;

heating the projections by an electric current to melt the binder contained therein; and

cooling the projections to harden them in position in the separator.

14. (Previously Presented) A manufacturing method of a separator for use in a fuel cell in which fuel gas and oxidizing agent gas are used as reaction gases, comprising:

pressing carbon powder containing a binder to form a plurality of projections, each in the form of a conductive pillar body;

assembling the projections with a plurality of mounting holes formed in a flat plate of synthetic resin;

heating the projections by an electric current to melt the binder contained therein; and

cooling the projections to harden them in position in the separator.

15-16. (Cancelled)

17. (Previously Presented) A manufacturing method of a separator for use in a fuel cell in which fuel gas and oxidizing agent gas are used as reaction gases, comprising:

filling carbon powder containing a binder in a plurality of upward recesses formed in a lower molding die in such a manner as to correspond with a plurality of projections;

positioning a flat plate of synthetic resin formed with a plurality of through holes on the lower molding die in such a manner that the through holes of the flat plate are

positioned to correspond with the upward recesses of the lower molding die and positioning an upper molding die formed with a plurality of downward recesses on the flat plate so that the downward recesses of the upper molding die are opposed to the upward recesses of the lower molding die through the through holes of the flat plate;

pressing the carbon powder filled in the upward recesses of the lower molding die toward the upper molding die by means of pressure means disposed in each bottom of the upward recesses so that the projections are formed across the through holes of the flat plate;

heating the molding dies under supply of an electric current to melt the binder contained in the projections; and

cooling the projections to harden them in position in the separator.

18. (Currently Amended) A fuel cell comprising:

at least a cell function assembly including ~~an~~ a single electrolytic membrane;

a pair of electrode plates assembled in contact with opposite surfaces of the single electrolytic membrane;

a first separator placed in contact with one of the electrode plates to form a reaction chamber to be supplied with fuel gas;

a second separator placed in contact with the other electrode plate to form a reaction chamber to be supplied with oxidizing agent gas; and

a set of current-collecting plates assembled respectively in contact with the first and second separators at opposite outermost sides of the cell,

wherein the electrode plates each are divided into a first plurality of spaced plates in contact with the single electrolytic membrane,

wherein the first and second separators each are composed of a perforated flat plate made of an insulation material and a plurality of conductive projections assembled with

a plurality of mounting holes formed in the flat plate and placed in contact with the divided electrode plates,

~~wherein the electrode plates each are divided into a first plurality of spaced plates, and~~

wherein the current-collecting plates each are divided into a second plurality of spaced plates placed in contact with the divided first and second separators.

19. (Previously Presented) A fuel cell as claimed in claim 18, wherein the flat plate is made of synthetic resin, and wherein the conductive projections each are in the form of a conductive pillar body made of pressed carbon powder.